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EXAMINER	
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ART UNIT	PAPER NUMBER
3623	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/903,855	WEBER ET AL.	
	Examiner	Art Unit	
	Jonathan G. Sterrett	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10-15-2001*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Summary

1. **Claims 1-54** are pending in the application.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 7 & 50** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding **Claims 7 & 50**, the limitations cite "**determining an optimal configuration comprising performing heuristics**". The specification illustrates on page 49 line 4-6 that heuristics "**form acceptable solutions using a manageable, relatively smaller number of calculations**". Since the claim cites an optimal solution is found using heuristics while the specification acknowledges that an 'acceptable solution' is found using heuristics, the invention is not enabled.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 2 & 50** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding **Claim 2**, the limitation "**as desired**" is vague and indefinite.

Regarding **Claim 50**, the limitation "said linear programmer" is cited. There is insufficient antecedent basis for this limitation in the claim. Claim 50 is stated as being dependent on Claim 45, although Claim 49 contains the necessary antecedent.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. **Claims 1-44** are rejected under 35 U.S.C. 101 because the invention is directed to non-statuatory subject matter.

The basis of this rejection is set forth in a two-prong test of:

(1) whether the invention is within the technological arts: and

(2) whether the invention produces a useful, concrete and tangible result.

7. For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a process claim to

pass muster, the recited process must somehow apply, involve, use, or advance the technological arts. In the present case, none of **Claims 1-44** are directed to anything in the technological arts as explained above. Specifically for **Claim 1,** the limitation "**creating a supply chain model representative of the supply chain**" is cited. This limitation can be performed manually without utilizing technological elements, for example, by drawing a representation of a supply chain model on a piece of paper. Further in **Claim 1**, the limitation "**defining optimization conditions for said supply chain model**" is cited. Further in **Claim 1**, the limitation "**determining an optimal configuration**" is cited. These limitations can be performed manually without utilizing technological elements, for example, by writing an LP representation of a supply chain model out on a piece of paper and solving it using the simplex method. Looking at the claims as a whole, nothing in the body of the claims recites any structure or functionality to suggest that a computer or any technology performs the recited steps. Additionally, for a claimed invention to be statutory, the claimed invention must produce a useful, concrete, and tangible result. In the present case, the claimed invention provides modeling and optimizing a supply chain system, which is a useful, concrete and tangible result. Although the recited process produces a useful, concrete and tangible result, since the claimed invention, as a whole, is not within the technological arts as explained above, **Claims 1-44** are deemed to be directed to non-statutory subject matter.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. **Claims 1-4, 10-12, 14, 15, 17-24, 26-43, 45-48, 53 and 54** are rejected under 35 U.S.C. 102(b) as being anticipated by ProModel Simulation Software Product **(ProModel)** as disclosed in the following documents:

Hefflin, Deborah; Harrell, Charles; "Simulation and Optimization using ProModel", 1998, Proceedings of the 1998 Winter Simulation Conference, pp.191-197, hereafter referred to as **Reference U1**.

Benson, Deborah, "Simulation Modeling and Optimization using ProModel", 1997, Proceedings of the 1997 Winter Simulation Conference, pp.587-593, hereafter referred to as **Reference V1**.

Web.archive.org, ProModel.com webpage of December 1, 1998, "Variable Resource Movement", pp.1-2, hereafter referred to as **Reference U2**.

Brock Engineering White Paper, "Combined Simulation Models in ProModel", www.brockeng.com/wsc95/wsc95doc.htm, pp.1-9, hereafter referred to as **Reference V2**.

Web.archive.org, ProModel.com webpage of July 13, 1997, "Link-Belt Testimonial", pp.1, hereafter referred to as **Reference W2**.

Vacca, John, "Faking it, then Making it", July 12, 1997, byte.com, pp.1-7, web.archive.org/web/19970712122641/www.byte.com/art/9511/sec5/art7.htm, hereafter referred to as **Reference X2**.

Regarding **Claim 1,** ProModel discloses:

creating a supply chain model representative of the supply chain, said model defining one or more processes representing the activities within the supply chain;

Reference U1 page 191 paragraph 2 line 1-3, ProModel is a simulation tool for creating supply chain models representative of the supply chain – e.g. supply chain systems and manufacturing models, which are activities within the supply chain.

defining optimization conditions for said supply chain model; and

Reference U1 page 196 paragraph 1 line 8-13, ProModel defines optimization conditions in terms of the model's performance output. SimRunner optimizes the performance depending on the input variables that it can vary automatically according to optimization conditions

Reference U1 page 196 paragraph 2 line 1-4, SimRunner can run factorial experiments for optimization, which depend on the definition of optimization conditions.

determining an optimal configuration for the processes in said supply chain model in view of said optimization conditions.

Reference U1 page 191 paragraph 1 line 10-14, SimRunner automatically varies the inputs to the model to determine the best performance possible (i.e. optimal configuration) given the model input variables.

Reference U1 page 196 paragraph 2 line 4-7, ProModel's optimization varies the input factors to determine the final optimal configuration of the model.

Regarding **Claim 2,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

analyzing the optimal configuration for the supply chain;

Reference U1 page 196 paragraph 2 line 1-4, Simrunner provides an optimization analysis that indicates whether changing variables impacts the objective function (i.e. for optimization).

reconfiguring the supply model as desired;

Reference U1 page 196 paragraph 2 line 1-4, After running a stage one analysis, the user reconfigures the model if a variable in question has no impact on the objective function.

re-optimizing the supply chain model.

Reference U1 page 196 paragraph 2 line 4-7, After performing a stage one analysis, a stage two optimization determines the optimal configuration of the supply chain model.

Regarding **Claim 3,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

wherein each of said processes is a make, move, purchase or sourcing process.

Reference U1 page 191 paragraph 2 line 1-3, ProModel is used for modeling a manufacturing system (i.e. make process).

Regarding **Claim 4,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

wherein the step of creating supply chain model comprises specifying one or more resources used or produced in each of the processes,

Reference V1 page 589 paragraph 2.4 line 3-5, resources are used in various processes modeled.

wherein said processes are represented in equations representing the use or production of said resources.

Reference V1 page 589 paragraph 2.4 line 8-10, decision rules (i.e. equations) are used for allocation of resources.

Reference V1 page 589 paragraph 2.5 line 12-15, resources are handled within the model according to Boolean equations that determine their utilization.

Regarding **Claim 10,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

the step of associating the resources to locations.

Reference V1 page 589 paragraph 2.4 line 6, resources can be static, so that they are assigned to particular nodes (i.e. locations) in the model.

Regarding **Claim 11,** ProModel discloses all the limitations of Claim 4 above, and also discloses:

the step of defining a multi-tiered pricing for one of the resources.

Reference V1 page 590 paragraph 4 line 8-9, resources are costed based on a usage cost as well as a cost of not using the resource. Total cost (i.e. price) depends on a multi-tiered costing scheme.

Regarding **Claim 12,** ProModel discloses all the limitations of Claim 4 above, and also discloses:

wherein the multi-tiered pricing is directly determined.

Reference V1 page 590 paragraph 4 line 8-12. The cost of using resources (i.e. prices) is directly determined based on the direct use of those resources.

Regarding **Claim 14,** ProModel discloses all the limitations of Claim 4 above, and also discloses:

specifying a constraint for said resources, said constraint limited the range of possible values for the resource in the optimal configuration.

Reference U2 page 1 paragraph 3 line 8-12, equations are used to specify the values associated with resources. These equations limit the range of possible values for the resource in any configuration, optimal and suboptimal.

Regarding **Claim 15,** ProModel discloses all the limitations of Claim 14 above, and also discloses:

wherein said constraint is hard, wherein said constraint cannot be broken in the optimal configuration.

Reference U2 page 1 paragraph 3 line 8-12, equations are used to specify the values associated with resources. These equations limit the range of possible values for the resource in any configuration, optimal and suboptimal. These equations are hard, and cannot be exceeded in the optimal configuration.

Regarding **Claim 17,** ProModel discloses all the limitations of Claim 4 above, and also discloses:

the step of specifying one or more units of measure for each of said resources.

Reference V1 page 589 paragraph 2.4 line 10-13, motion characteristics such as speed (time per distance) and pickup and delivery times are units of measure specified for each resource.

Regarding **Claim 18,** ProModel discloses all the limitations of Claim 4 above, and also discloses:

defining the number of dimension for the resource.

Reference V1 page 589 paragraph 2.3, path networks define the number of two dimensions for the resource to move along.

Regarding **Claim 19,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

the step of specifying a service level for one of the processes, whereby said service levels states minimum level of activity in the process at a location.

Reference V1 page 589 paragraph 2.5 line 2.3, service times (i.e. service levels) can be specified for processes at a location.

Reference V1 page 589 paragraph 2.5, levels of activity as modeled by processing times of a resource at a location can be specified by constraints, including where the constraint specifies a minimum or maximum.

Regarding **Claim 20,** ProModel discloses all the limitations of Claim 19 above and also discloses:

wherein said service levels specifies a minimum percentage activity as measured by cost of one of the resources.

Reference V1 page 390 paragraph 4 line 8-9, the cost of a resource at a location for not using the resource is finite and not zero, hence the minimum percentage activity of a resource can be specified as zero percent at a nominal fixed cost determined by the modeler.

Regarding **Claim 21,** ProModel discloses all the limitations of Claim 19 above, and also discloses:

wherein said service levels specifies a minimum percentage of activity as measured by volume of one of the resources.

Reference V1 page 589 paragraph 2.5, levels of activity as modeled by processing times of a resource at a location are specified by constraints, including where the constraint specifies minimum percentage of activity. Since the levels of activity are specified in terms of equations, the constraint construct as disclosed by ProModel includes where the minimum percentage of activity is specified as measured by volume of one of the resources.

Regarding **Claim 22,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

the step of specifying a maximum number of sources for one of the resources at a location in the supply chain.

Reference V1 page 589 paragraph 2.3 line 1-3, path networks specify where resources can move from one location to another.

Reference V1 page 589 paragraph 2.4 line 6-8, resources can be assigned to a path network, so that the requirement of a resource at a node in the model (i.e. location) is limited (i.e. specified) by the maximum number of resources assigned to that path network.

Reference V1 page 589 paragraph 2.4 line 3-5, resources can be uniquely assigned to do one task, e.g. line 4 – perform an operation at a location in the network.

Regarding **Claim 23,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

the step of specifying a maximum number of sources for the resources at a location in the supply chain.

Reference V1 page 589 paragraph 2.3 line 1-3, path networks specify where resources can move from one location to another.

Reference V1 page 589 paragraph 2.4 line 6-8, resources can be assigned to a path network, so that the requirement of a resource at a node in the model (i.e. location) is limited (i.e. specified) by the maximum number of resources assigned to that path network. A path network can be shared between different types of resources.

Reference V1 page 589 paragraph 2.4 line 3-5, resources can be uniquely assigned to do one task, e.g. line 4 – perform an operation at a location in the network. In a model there can be many different types of resources – e.g. line 4, performing operations and e.g. line 5, perform maintenance.

Regarding **Claim 24,** ProModel discloses all the limitations of Claim 1 above and also discloses:

the step of specifying a lead time needed to initiate one of the

processes.

Reference V1 page 589 paragraph 2.5 line 7-9, operation times can be specified, including specifying a lead time for that operation.

Reference V1 page 588 paragraph 2.1 line 9-14, machines may have periodic down time (e.g. lead time) based on a user defined condition.

Regarding **Claim 26,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

defining locations in the supply chain;

Reference V1 page 588 paragraph 2.1 line 1-3, routing locations are defined in ProModel – see also paragraph 2.3 line 3-4, path networks defined as nodes.

defining items in the supply chain; and

Reference V1 page 589 paragraph 2.2 line 1-2, parts or entities are defined as individual items in the system.

specifying which of said items appears at each said locations.

Reference V1 page 589 paragraph 2.6 line 1-2, parts or entities are modeled as deterministic, conditional or stochastic arrivals into the system.

Regarding **Claim 27,** ProModel discloses all the limitations of Claim 26 above, and also discloses:

wherein said step of creating a supply chain model further comprises the step of defining lanes between said locations.

Reference V1 page 589 paragraph 2.3 line 1-5, path networks (i.e. lanes) are defined as nodes (i.e. locations) where resources and entities can move between.

Regarding **Claim 28,** ProModel discloses all the limitations of Claim 27 above, and also discloses:

wherein at least one lane is created between each location.

Reference V1 page 589 paragraph 2.3 line 16-18, locations in a crane network have at least one lane between each location in the network.

Regarding **Claim 29,** ProModel discloses all the limitations of Claim 28 above, and also discloses:

the step of specifying one of said lanes as a default lane between each location.

Reference V1 page 589 paragraph 2.3 line 16-18, locations in a crane network have at least one lane between each location in the network – this lane is the default lane for locations served by the crane.

Regarding **Claim 30,** ProModel discloses all the limitations of Claim 27 above, and also discloses:

wherein a lane is created between several locations having an identical SKU.

Reference V1 page 589 paragraph 2.3 line 1-5, path networks connect locations where entities (i.e. SKU's) travel between several locations.

Regarding **Claim 31,** ProModel discloses all the limitations of Claim 27 above, and also discloses:

the step of identifying one or more manufacturing plants, distribution centers, and storage facilities in the supply chain.

Reference U1 page 196 paragraph 11 line 5-6, models address various players in the supply chain, that is identifying various types of supply chain locations, including, warehouses (i.e. distribution center and storage facility), suppliers (i.e. manufacturing plants),

Regarding **Claim 32,** ProModel discloses all the limitations of Claim 31 above, and also discloses:

the step of identifying one or more customer locations in the supply chain.

Reference U1 page 196 paragraph 11 line 6, models address various players in the supply chain, that is identifying various types of supply chain locations, including customers.

Regarding **Claim 33,** ProModel discloses all the limitations of Claim 26 above, and also discloses:

the step of specifying pre-build time for one of the items, said pre-build time describing the amount of time needed to obtain the item for use in a process.

Reference V1 page 588 paragraph 2.1 line 13, change of material downtime can be specified, i.e. the amount of time needed to obtain the item for use in a process..

Regarding **Claim 34,** ProModel discloses all the limitations of Claim 24 above, and also discloses:

wherein each item at each location defines a SKU.

Reference V1 page 589 paragraph 2.2 line 1-3, parts or entities define the items being processed in a system at each location, including finished products (i.e. SKU's).

Regarding **Claim 35,** ProModel discloses all the limitations of Claim 34 above, and also discloses:

the step of specifying a supplier for the SKU.

Reference V1 page 588 paragraph 2.1 line 1-2, routing locations are specified – they correspond to where entities (i.e. SKU's) are routed to or from.

Reference V2 page 3 paragraph 3.2 line 1, In this example, a supplier "Valdez" is specified for the oil (i.e. SKU).

Regarding **Claim 36,** ProModel discloses all the limitations of Claim 34 above, and also discloses:

the step of specifying a special delivery requirement for the SKU.

Reference V2 page 4 Table 3, this table specifies the special delivery requirement of realigning the tank input valve for delivery of the SKU "oil".

Regarding **Claim 37,** ProModel discloses all the limitations of Claim 34 above, and also discloses:

the step of specifying a target inventory for the SKU.

Reference V2 page 3 paragraph 3.1 line 10-11, target inventory for the oil (i.e. SKU) is specified at 80% of carrying capacity.

Regarding **Claim 38,** ProModel discloses all the limitations of Claim 34 above, and also discloses:

the step of preserving referential integrity for an item at several of the locations by using the SKU at these locations.

Reference V1 page 589 paragraph 2.2 line 1-7. entities (i.e. SKU's) preserve referential integrity at any of the locations in a ProModel network by being created and assigned as unique entities. Any number of separate entities (i.e. SKU's) can be created at any location in ProModel.

Regarding **Claim 39,** ProModel discloses all the limitations of Claim 34 above, and also discloses:

the step designating the SKU as a raw good, a finished good, or a work-in-progress.

Reference V1 page 589 paragraph 2.2 line 2-3, Entities (i.e. SKU's) can be defined as raw materials (i.e. raw goods), a finished product (i.e. finished good) or WIP (i.e. work-in-progress).

Regarding **Claim 40,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

wherein information used to create the supply chain model is imported from an outside data source.

Reference V1 page 590 paragraph 3.7, information from Microsoft Excel™ can be imported from the outside.

Regarding **Claim 41,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

wherein information used to create the supply chain model is imported from a previously created supply chain model.

Reference U1 page 192 paragraph 10 line 4-7, commonly used templates (cells or subroutines) are created for one model and reused in subsequent models.

Regarding **Claim 42,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

wherein information used to create first portion of the supply chain model is copied and modified a second portion of the supply chain model.

Reference W2 page 1 paragraph 4 line 1-3, ProModel's simulation creates a first baseline model, then a modified copy of this baseline to illustrate the benefits to be realized from making changes.

Regarding **Claim 43,** ProModel discloses all the limitations of Claim 1 above, and also discloses:

wherein predefined data is used to create a portion of the supply chain model.

Reference U1 page 191 paragraph 5 line 1-2, built-in distribution functions (i.e. predefined data) is used to create a portion of the supply chain model.

Claims 45 and 53 recite similar limitations as those recited in **Claim 1** above, and are therefore rejected under the same rationale.

Claims 54 recites similar limitations as those recited in **Claim 2** above, and are therefore rejected under the same rationale.

Regarding **Claim 46**, ProModel discloses:

A display device for displaying said optimized supply chain model.

Reference U1 page 196 paragraph 3 line 3-5, SimRunner provides charts for graphical display of optimized model. Since ProModel runs on a PC, these results are displayed on a PC monitor (i.e. display device).

Regarding **Claim 47**, ProModel discloses:

Wherein the supply chain model describes the processes in the supply chain.

Reference U1 page 191 paragraph 1 line 1-3, ProModel describes the various processes in a supply chain through simulation.

Regarding **Claim 48**, ProModel discloses:

Wherein the supply chain model describes the resources, items, locations, and lanes in each process.

Reference U1 page 193 paragraph 2.4 line 1-3, **resources** are described in the supply chain processes modeled in ProModel.

Reference U1 page 193 paragraph 2.2 line 2-4, **items** are described in the supply chain processes modeled in ProModel.

Reference U1 page 192 paragraph 2.1 line 1-4, **locations** are described in the supply chain process modeled in ProModel.

Reference U1 page 193 paragraph 2.3 line 1-3, path networks (i.e. **lanes**) are described in the supply chain process modeled in ProModel.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. **Claims 5, 6, 8, 16 and 49** are rejected under 35 U.S.C. 103(a) as being unpatentable over **ProModel** in view of **Erkut**.

Erkut, Erhan; Oezen, Uemit; "Aggregate Planning for Distribution of Durable Household Products: A Case Study", 1996, Journal of Business Logistics, 17, 2; ABI/INFORM Global, pp.217-234.

Regarding **Claim 5,** ProModel discloses all the limitations of Claim 4 above, but does not teach linear programming as per:

wherein the step of determining an optimal configuration comprises performing linear programming using said equations.

Erkut teaches:

wherein the step of determining an optimal configuration comprises performing linear programming using said equations.

Page 221 paragraphs 1 & 2, resource definitions and equations for resources and for overall definition of linear program for distribution model.

Page 221 paragraph 4 line 2-4, model was optimizable as a linear program.

ProModel and Erkut provide solutions for solving supply chain problems, thus both ProModel and Erkut are analogous art.

Erkut teaches that applying linear programming techniques can minimize operational costs (page 224 paragraph 3 line 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of ProModel, regarding providing simulation software to optimize supply chain models, to include the step of optimizing those models using linear programming, as taught by Erkut, because it would minimize operational costs.

Regarding **Claim 6,** ProModel discloses all the limitations of Claim 4 above, but does not teach :

wherein the step of determining an optimal configuration comprises performing mixed integer programming.

Erkut teaches:

wherein the step of determining an optimal configuration comprises performing mixed integer programming.

Page 219 paragraph 3 line 9, Erkut's final model to develop an optimal distribution scheme for durable goods was a mixed-integer programming model.

ProModel and Erkut provide solutions for solving supply chain problems, thus both ProModel and Erkut are analogous art.

Erkut teaches that applying linear programming techniques can minimize operational costs (page 224 paragraph 3 line 1) and that using a simple mixed integer approach simplified the model development and computational effort (page 219 paragraph 3 line 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of ProModel, regarding providing simulation software to optimize supply chain models, to include the step of optimizing those models using linear programming, as taught by Erkut, because it would minimize operational costs while simplifying the supply chain model and resulting computational efforts required to optimize the model.

Regarding **Claim 8,** ProModel and Erkut teach all the limitations of Claim 5 above, but ProModel does not teach:

wherein the step of determining an optimal configuration comprising performing successive integer programming.

Erkut teaches:

wherein the step of determining an optimal configuration comprising performing successive integer programming.

Page 226 paragraph 1 line 9-10, Erkut models the distribution model with successive models, that is, each model builds on assumptions made in the last model and incorporates corrections and suggestions to improve the next model.

Erkut teaches that initial models were impractical to implement although were mathematically optimized. Performing successive integer programming results in models that provide a practical result that is optimized (Page 226 paragraph 1 line 10-11).

ProModel and Erkut provide solutions for solving supply chain problems, thus both ProModel and Erkut are analogous art.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of ProModel, regarding providing simulation software to optimize supply chain models, to include the step of optimizing those models using successive integer programming, as taught by Erkut, because it would minimize operational costs by providing an increasingly practical set of optimized solutions to the supply chain problem.

Regarding **Claim 16,** ProModel teaches the limitations of Claim 14 above, but does not teach:

wherein said constraint is soft, wherein said constraint can be broken in the optimal configuration at a penalty cost.

Erkut teaches:

wherein said constraint is soft, wherein said constraint can be broken in the optimal configuration at a penalty cost.

Page 222 paragraph 2 line 4, the penalties associated with exceeding the depot capacity constitute soft constraints, that is, if the resource limitations were exceeded, those constraints could be broken at the penalty cost.

ProModel and Erkut provide solutions for solving supply chain problems, thus both ProModel and Erkut are analogous art.

Erkut teaches that applying linear programming techniques can minimize operational costs (page 224 paragraph 3 line 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of ProModel, regarding providing simulation software to optimize supply chain models, to include the step of optimize those models using linear programming, as taught by Erkut, because it would minimize operational costs.

Claim 49 recites similar limitations as those recited in **Claim 5** above, and is therefore rejected under the same rationale.

12. **Claims 7 and 50** are rejected under 35 U.S.C. 103(a) as being unpatentable over **ProModel** in view of **Thierauf**.

Thierauf, Robert J.; Klekamp, Robert C; "Decision Making through Operations Research", 2nd Edition, copyright 1975, pp.157-207, 521-537.

Regarding **Claim 7,** ProModel discloses all the limitations of Claim 4 above, but does not teach:

wherein the step of determining an optimal configuration comprising performing heuristics.

However the concept of performing heuristics to determine an optimal configuration is old and well known in the art, as evidenced by **Thierauf**.

Thierauf teaches:

wherein the step of determining an optimal configuration comprising performing heuristics.

Page 524 paragraph 2 line 2-3, heuristic programming uses repeatable steps to explore paths to find an optimal solution.

Page 172 paragraph 1 line 2-6, the computational simplex method uses a repeating method of iterating (i.e. heuristic) until the best solution (i.e. optimal) is found.

ProModel and Thierauf provide solutions for solving supply chain problems, thus both ProModel and Thierauf are analogous art.

Thierauf teaches that applying heuristic techniques permit the decision maker to make decisions quickly by reducing the number of ways that decisions can be made (i.e. simplifying assumptions). Futhermore, Thierau teaches that the simplification provided by using heuristics reduces the complexity of a problem so that it can be computationally solved (page 523 paragraph 3 line 5-11) to find an optimal solution.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of ProModel, regarding providing simulation software to optimize supply chain models, to include the step of using heuristic programming techniques (i.e. provide an optimal solution), as taught by Thierauf, because it would speed decision making and improve the computational solvability of a problem by simplifying the model describing the problem.

Claim 50 recites similar limitations as those recited in **Claim 7** above, and is therefore rejected under the same rationale.

13. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over **ProModel** in view of **Erkut** and further in view of **Thierauf**.

Regarding **Claim 9,** ProModel and Erkut teach all the limitations of Claim 5 above, but ProModel and Erkut do not teach:

wherein the step of determining an optimal configuration comprising performing local searching heuristics.

Thierauf teaches:

wherein the step of determining an optimal configuration comprising performing local searching heuristics.

Page 524 paragraph 2 line 2-3, heuristic programming uses repeatable steps to explore paths to find an optimal solution.

Page 527 paragraph 1 line 10-11, the computational branch and bound optimization heuristic uses local searching to converge to an optimal solution.

ProModel, Erkut and Thierauf provide solutions for solving supply chain problems, thus they are analogous art.

Thierauf teaches that applying heuristic techniques permit the decision maker to make decisions quickly by reducing the number of ways that decisions can be made (i.e. simplifying assumptions). Futhermore, Thierau teaches that the simplification provided by using heuristics reduces the complexity of a problem so that it can be computationally solved (page 523 paragraph 3 line 5-11).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the collective teachings of ProModel and Erkut, regarding using linear programming in simulation software to optimize supply chain models, to include the step of using local search heuristic techniques to solve the model (i.e. provide an optimal solution), as taught by Thierauf, because it would speed decision making and improve the computational solvability of a problem by simplifying the model describing the problem.

14. **Claims 13, 25, 44, 51 and 52** are rejected under 35 U.S.C. 103(a) as being unpatentable over ProModel.

Regarding **Claim 13,** ProModel discloses all this limitations of Claim 4 above, and teaches:

The use of multi-tiered pricing in determining the cost of using the resources, as discussed in claims 11 and 12 above.

ProModel does not teach:

wherein the multi-tiered pricing is cumulatively determined.

Official Notice is taken that it is old and well known in the art of procurement to tier pricing of purchased material based on the cumulative use of those materials. It is very common for purchasing agreements to contain clauses where pricing of materials is lowered based on the cumulative amount purchased. This is also known as a volume discount. This type of agreement

reflects the cost savings passed on to the purchaser that the supplier typically achieves through economies of scale resulting from the covering of fixed costs in the supplier operation.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of ProModel, regarding providing simulation software to optimize supply chain models, to include the step of using a multi-tiered pricing structure for resources that is cumulatively determined, because it would result in a supply chain model that produces accurate results through depicting in the model a known, common purchasing practice.

Regarding **Claim 25,** ProModel discloses all the limitations of Claim 1 above and also teaches:

Calculating variable costs for one of the process (Reference V1 page 590 paragraph 4 line 8-9).

ProModel does not teach:

the step of specifying the fixed costs for one of the processes.

Official Notice is taken that it is old and well known in the art to determine a fixed cost for a process. This is typically the cost associated with procuring capital equipment necessary for the process itself outside of any production throughput or utilization cost (i.e. variable cost).

Fixed costs and variable costs together are used to determine a total cost, which is necessary to determine profitability.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of ProModel, regarding providing simulation software to optimize supply chain models, to include the step of specifying fixed costs, because it would enable the determination of profitability in an optimized model.

Regarding **Claim 44,** ProModel discloses all the limitations of Claim 1 above, and teaches:

Calculating costs associated with entities (i.e. SKU's) during the course of a simulation run (Reference V1 page 590 paragraph 4 line 2-4).

ProModel does not teach:

the step of itemizing tax and tariff information.

Official Notice is taken that itemizing tax and tariff information in supply chain management is old and well known in the art. A well known example of this is the calculation of duty drawback to lower the tax burden associated with importing raw materials or components and exporting the same materials or components as part of a finished good.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of ProModel, regarding tracking product costs during a simulation, to include where those product costs include itemization of tax and tariff information, because it ensure a supply chain simulation could accurately model the benefits associated with duty drawback.

Regarding **Claims 51 and 52**, ProModel discloses all the limitations of Claim 45 above, but does not teach:

Wherein said input device is connected to said optimizer through network connection, as per **Claim 51**;

Wherein said network is the internet, as per **Claim 52**.

Official Notice is taken that it is old and well known in the art to connect an input device to an application, including a supply chain management modeling and optimization application, through a network connection, as per **Claim 51**, and where the network connection is the internet, as per **Claim 52**. The use of networked applications, including through the internet, provides for the benefits of allowing a client user to run an application without having to provide the computing power required by the application (i.e. the application is hosted over a network).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of ProModel, regarding providing a software application that provides supply chain management modeling and simulation, where the input device is connected over a network connection, as per Claim 51, and is connected over the internet, as per Claim 52, because it would provide a user access to the application's functionality without requiring the user's computer to provide the computer power required by the application.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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US 6,151,582 by Huang discloses a decision support system for management of an agile supply chain.

US 5,970,465 by Dietrich discloses a method for part procurement in a production system with constrained resources.

US 4,744,028 by Karmarkar discloses a method and apparatus for efficient resource allocation.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan G. Sterrett whose telephone number is 571-272-6881. The examiner can normally be reached on 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on 571-272-6729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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